

CHAPTER 3.4

Biological Resources: Botany, Wildlife, and Wetlands

This Chapter discusses the existing environment for terrestrial wildlife, botanical, and wetland resources¹ in the Shasta River watershed; identifies potential impacts the Shasta River Watershed-wide Permitting Program (Program) could have on those resources; and identifies mitigation for those impacts deemed to be potentially significant. Information presented in the Setting section below is based on reconnaissance surveys of the watershed conducted October 2, 2006 through October 6, 2006, as well as numerous published reports and technical studies, including the California Natural Diversity Data Base (CDFG, 2008) and California Native Plant Society's (CNPS) Electronic Inventory (CNPS, 2006) records for the following United States Geological Survey (USGS) quadrangles: Weed, Lake Shastina, Gazelle, Montague, and Little Shasta. Regional published and unpublished biological literature, e.g., *Shasta River Woody Riparian Vegetation Inventory* (Deas et al., 1997), *Northwest California, a Natural History* (Sawyer, 2006) and other biological literature, e.g., Sawyer and Keeler-Woolf (1995); Zeiner et al. (1990); and Holland (1986) were other sources. Additional information on special-status species² and communities of concern were obtained through the U.S. Fish and Wildlife Service (USFWS) Arcata Field Office (USFWS, 2006).

3.4.1 Setting

The Program Area is within the California Floristic Province,³ Cismontane Region and is located within the Klamath Bioregion,⁴ which extends from the Pacific Coast eastward more than halfway across California to the Modoc Plateau and the Sacramento Valley floor. Forest types change from old-growth redwoods, white fir, and Douglas fir along the coast to drier types in the mountain ranges of Siskiyou County: mixed conifer–pine and mixed conifer–fir, then to Ponderosa pine and a variety of shrub communities (e.g., bitterbrush-rabbitbrush and juniper-sagebrush). The region is drained by rivers including the Eel, Trinity, Klamath, and Russian. The

¹ Wetland resources are treated in this Chapter when they are under state or federal jurisdiction and have an ecological function supporting plants and terrestrial animals. Chapter 3.2 discusses hydrology and water quality.

² For the purpose of this document a “special-status species” is any species that meets the definition of “endangered, rare or threatened” in CEQA *Guidelines*, § 15380. Some CDFG species of special concern are special-status species. Such species are referred to as “special-status species” in this document.

³ Geographic subdivisions are used to describe and predict features of the natural landscape. The system of geographic units is four-tiered: provinces, regions, subregions, and districts. The State of California is covered by three floristic provinces: California Floristic Province, Great Basin, and Desert. The California Floristic Province is the largest, includes most of the state and small portions of Oregon, Nevada and Baja California, Mexico and is made up of six regions.

⁴ California bioregions were developed by the Inter-agency Natural Areas Coordinating Committee (California Department of Forestry and Fire Protection, 1992). These regions are more reflective of fauna as well as flora.

Klamath is a major river of the Pacific coast (250 miles long). Two of its tributaries that enter the Middle Klamath, the Scott and Shasta Rivers, drain arid interior valleys characterized by extensively utilized annual grasslands.

Shasta River Valley

The Program Area is generally located in central Siskiyou County and regionally within the Shasta Valley of the Cascade Ranges ecological region (U.S. Forest Service, 2005). The southern portion of the Program Area is a diverse mixed conifer/pine woodland, or “Eastside Pine,” although this area is just west of the extent of Eastside Pine as mapped by Mayer and Laudenslayer (1988). Ponderosa pine (*Pinus ponderosa*) is the dominant tree species in this habitat type. The northern three-quarters of the Program Area is dominated by annual grassland habitats, much less complex but interspersed with wet meadows, seeps, and crossed by several riparian corridors.

Climate, Topography, Soils and Drainage

The Shasta River watershed is located in the rain shadow of the Klamath range. Summers are very hot, winters cold (average winter temperature in Yreka is 2°C (36°F), and in summer can exceed 38°C (100°F)). The Klamath mountains to the west block moist ocean air currents as they move eastward, and the Shasta Valley itself receives only 11 to 17 inches of rain annually (and even less in some areas) between the months of October and March.

Elevations within the Program Area generally range between 2,500 feet above mean sea level (amsl) at the northern end of the Program Area to 3,500 feet amsl at the southern end of the Program Area. The dominant soil types vary significantly along the River’s length. Settlemeier loam is the dominant near river soil in the Valley from Interstate 5 to the vicinity of County Road A12. Gazelle silt loam and Settlemeier loam both dominate from County Road A12 to near Louie Road. Settlemeier loam again dominates from the area of Louie Road to Dwinnell Dam. Other soils are interspersed with these dominant types, but are generally limited in their areal extent. These dominant soils, Settlemeier loam and Gazelle silt loam, are both subject to winter flooding and have persistent high water tables for at least a few months each year (Deas, 1997).

The Shasta River originates on the north slope of Mount Eddy. Flow in the Shasta River is derived from both rainfall and snowmelt. Snowmelt from Mount Shasta contributes significantly to the surface water and groundwater hydrology of the basin. Mount Shasta has permanent glaciers and a snow pack that usually persists, to varying degrees, on a year-round basis. Chapter 3.2 provides a more detailed discussion of these topics.

Existing Land Use

Irrigated permanent pasture and hay fields are located near the mainstem of the Shasta River with dryland grazing occurring on the more sloping, foothill farmland properties. Alfalfa farming occurs on most of the farmland without high water tables. Nearly all of the alfalfa grown in Siskiyou County is grown under irrigation (see Chapter 3.1). Dry-land grain production to

support livestock operations is generally undertaken by local farmers where the soil is tillable but irrigation is not possible.

Plant Communities/Wildlife Habitats – Higher Portions of the Valley

The vegetation classification system used in this document is based, in part, on the classification systems of Holland (1986) and Mayer and Laudenslayer (1988). The first has been the standard classification system used for describing California's vegetation for a number of years. The second system uses broader groupings known as **Wildlife Habitat Relationships** types (in bold), which are more useful when evaluating plant and animal resources simultaneously. Each of these communities as they are found in the Valley and surrounding slopes is described below and displayed in **Figure 3.4-1**.

Klamath Mixed Conifer

Klamath Mixed Conifer (KMC) is present in the higher, southernmost portion of the Program Area. KMC habitat is typically composed of tall, dense to moderately open, needle-leaved evergreen forests with patches of broad-leaved evergreen and deciduous low trees and shrubs (Küchler, 1977). The overstory layer is characterized by a mixture of conifers. Dominant conifers in this portion of this habitat are white fir (*Abies concolor*), Douglas-fir (*Pseudotsuga menziesii*), and ponderosa pine (*Pinus ponderosa*). The KMC type comprises highly diverse vegetation and soils, with multiple nesting and feeding niches for wildlife. On the western portion of the Valley slopes, this type includes Jeffrey pine (*Pinus jeffreyi*).

Montane Hardwood

The **Montane Hardwood** habitat type occurs at lower elevations below 4,000 feet on the west side of the Shasta Valley. In the Coast Range and Klamath Mountains, canyon live oak often forms pure stands on steep canyon slopes and rocky ridge tops. At higher elevations, it is scattered in the overstory among ponderosa pine, white fir, Jeffrey pine; middle elevation associates are Douglas-fir and California black oak (*Quercus kelloggii*). Understory vegetation is mostly scattered woody shrubs.

Juniper

Surrounding much of the Valley at middle elevations (from 2,450 to 4,000 feet) are extensive stands of **Juniper** habitat (*Juniperus occidentalis*). Shrub species typically associated with juniper habitats include antelope bitterbrush (*Purshia tridentata*), California buckwheat (*Eriogonum fasciculatum*), and curlleaf mountain-mahogany (*Cercocarpus ledifolius*).

Eastside Pine

The **Eastside Pine** habitat is characterized by short to moderate height (65-115 feet tall at maturity) pine trees. Ponderosa pine is the dominant species in the Program Area, but it also includes Jeffrey pine, incense cedar (*Calocedrus decurrens*), and western juniper. Tree densities within this

community vary depending upon local soil and topographic conditions. Undergrowth includes big sagebrush (*Artemisia tridentata*), antelope bitterbrush and ceanothus (*Ceanothus spp.*). Mayer and Laudenslayer (1988) remark on the value of this habitat as winter range for deer, especially when the stands are varied in tree species, sub-canopy species, and understory vegetation.

Plant Communities/Wildlife Habitats – Valley Floor

Sagebrush and Bitterbrush

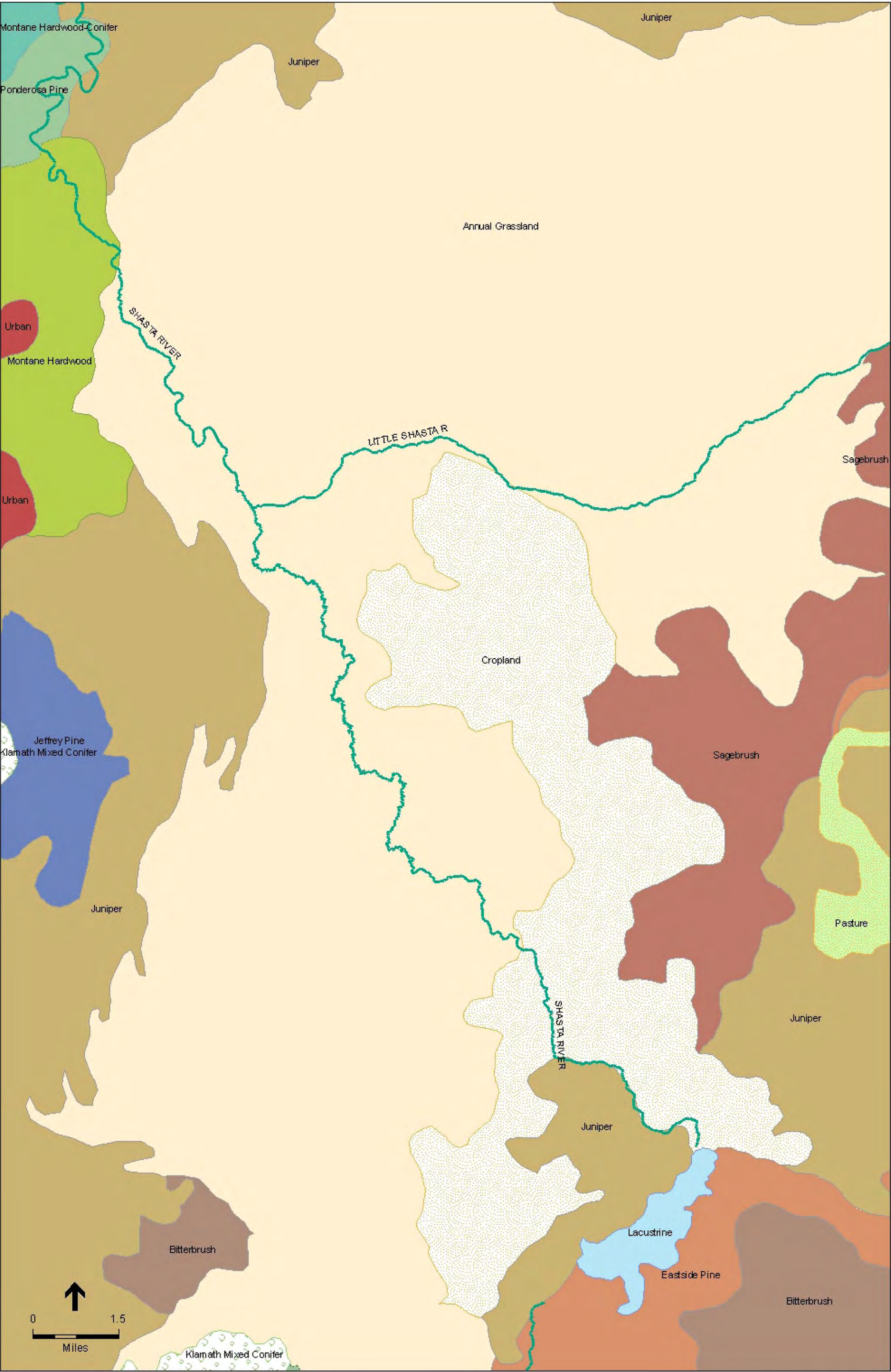
The **Sagebrush** habitat type occurs on the Shasta Valley's non-pasture lands, especially on the east side. Sagebrush stands are typically large, open and discontinuous and dominated usually by big sagebrush (*Artemisia tridentata*). However, in the Shasta Valley the habitat is predominately rabbitbrush (*Chrysothamnus nauseosus*) with western chokecherry (*Prunus virginiana demissa*) and bitterbrush (*Purshia tridentate*) also present. Where the latter species dominates, the habitat is termed "Bitterbrush," a species highly digestible, with desired levels of moisture, calcium, phosphorus, and fat (Hickman, 1975). It tolerates considerable browsing. Its seeds are used by many species of birds, rodents, and insects and it provides high value winter forage for native ungulates.

Annual Grassland

Where the land is not in active cultivation, the habitat is classified as **Annual Grassland** (AG) which comprises mainly herbaceous annual plant species and is the largest single habitat type in the Shasta Valley. Introduced annual grasses are the dominant plant species in this habitat: slender wild oats (*Avena bargata*), brome (*Bromus*), meadow barley (*Horeduem spp.*), and fescue (*Festuca*). Common forbs include broadleaf filaree (*Erodium botrys*), turkey mullein (*Eremocarpus setigerus*), bur clover (*Medicago polymorpha*), and popcorn flower (*Plagiobothrys nothofulvus*). There are remnant stands of the original perennial grasses that dominated before European settlement, including purple needlegrass (*Nassella pulchra*) and Idaho fescue (*Festuca idahoensis*). Many wildlife species, especially raptors, use AG for foraging, but may require special habitat features in addition, such as cliffs, caves, ponds, or adjacent woodlands for breeding, resting, and escape cover.

Fresh Emergent Wetland

Fresh Emergent Wetlands (FEW) are characterized by erect, rooted herbaceous hydrophytes (i.e., water-dependent plants). Dominant vegetation is generally perennial monocots. All emergent wetlands are flooded frequently enough so that the roots of the vegetation prosper in an anaerobic environment. Fresh emergent wetlands are among the most productive wildlife habitats in California. They provide food, cover, and water for more than 160 species of birds and numerous mammals, reptiles, and amphibians (Mayer and Laudenslayer, 1988). The dominant plants in these Shasta Valley FEW areas include pale spikerush (*Eleocharis macrostachya*) and sword-leaved rush (*Juncus ensifolius*).



Composition and Condition of the Riparian Vegetation – Relationship to Streamflow

Riparian vegetation and habitat along the Shasta River is adjacent to a variety of upland habitats and has diverged considerably from pristine conditions. The discussion in this Chapter focuses on the riparian areas and the wildlife they support, as terrestrial impacts of the Program are almost exclusively limited to this habitat type and immediately adjacent uplands.

The long-term health of dynamic riparian ecosystems is dependant upon more than access to water during the growing season. Reproduction and growth of riparian plant species are closely associated with peak flows (also referred to as flood flows or channel-forming flows), and related channel processes such as meandering (Busch and Scott, 1995). Where stream regulation limits flooding and channel movement, opportunities for seed germination are limited. In such systems, riparian community structure may become less dynamic (Busch and Scott, 1995). The reverse is also true: if a stream is denuded of riparian vegetation, the system becomes so active and unconfined that successful establishment of riparian plants is inhibited by never being simultaneously moist, bare, and protected from removal by subsequent disturbance for a period of time long enough to germinate, root and set seed. The current condition of Shasta River riparian vegetation reflects a history of logging, mining, grazing,⁵ beaver trapping, water diversion, and control (Dwinnell Dam) that has reduced its extent and structural and species diversity.

Riparian vegetation in the Shasta River has eight dominant tree species: white alder (*Alnus rhombifolia*); Oregon ash (*Fraxinus latifolia*); black cottonwood (*Populus trichocarpa*); red birch (*Betula fontinalis*); Oregon white oak (*Quercus garryana*); red willow (*Salix laevigata*); arroyo willow (*Salix lasiolepis* var. *bracelinea*); and Pacific willow (*Salix lasiandra*) (Watercourse Engineering, 2002).

In 1997, Deas et al. conducted an inventory of location and extent of woody riparian vegetation for the Shasta River from Dwinnell Reservoir to the confluence with the Klamath River. Four general classifications were defined to represent densities throughout the study reach: 1) forest features; 2) continuous, linear vegetation features (>2 trees per 100 feet); 3) discontinuous vegetation; and 4) absence of vegetation. The Deas (1997) report is the principle source for the discussion that follows, updated where available from more current information and observations made during the preparation of this Draft EIR.

⁵ As discussed in Chapter 3.2 and below under Section 3.4.3, livestock grazing is a Covered Activity under the Program, but similar to some other Covered Activities it is not new; rather, it has been occurring in the Program Area for decades. Hence, authorizing livestock grazing as part of the Program will not cause the level of grazing to increase or result in any impacts in addition to those that are already part of baseline conditions in the Program Area. In fact, the Program will reduce the impacts of grazing by excluding livestock from some riparian areas by installing and maintaining fencing (see ITP and MLTC Covered Activity 5). Also, where riparian fencing is constructed as part of the Program, any grazing of livestock adjacent to the channel or within the bed, bank, or channel of the Shasta River or its tributaries may only occur in accordance with a grazing management plan that will result in improved riparian function and enhanced aquatic habitat.

Riparian Conditions, Upper Watershed. Deas et al. found few tracts of riparian “forest” along the mainstem of the Shasta River. Many of these areas could be described as thickets, consisting mainly of willow and other smaller trees. There were a few locations that formed continuous areas of large woody vegetation, i.e., a roughly continuous row of trees lining the river banks along the four or five miles immediately downstream from the Dwinnell Reservoir. Riparian conditions are variable today, but long stretches here are in relatively good shape and provide shade, woody debris, and overhung banks. There is little depth (measured as the distance perpendicular to the axis of the river) to these riparian vegetation components, and while there are other reaches where continuous, linear woody vegetation is present, it generally occurs intermittently and on one bank or the other. Several areas are devoid of woody riparian vegetation altogether, for example, in the vicinity of the County Road A12 where woody vegetation is mostly absent (Deas et al., 1997).

Riparian Conditions, Middle Watershed. A recent analysis (SVRCD File Information) took a more structural approach to describing the riparian conditions from River Mile (RM) 27 to RM 7.75. Here the mainstem Shasta flows through the majority of the agricultural portions of the Shasta Valley. This reach includes significant tributaries at Willow Creek, Julian Creek, and the Little Shasta River. This reach ends at the confluence with Yreka Creek. Streambanks in this area tend to be fine textured, highly erodible and vertical (height ranging from three to six feet), and hence very susceptible to livestock hoof and grazing impacts.⁶ The condition of the streambank encourages streambank failures and significantly increases fine sediment load. Soil alkalinity over parts of the reach tend to be very restrictive of tree growth, although other areas within the reach still sustain good canopy and shade. Tules are the most common emergent plant in this reach, and they provide for channel roughness, channel narrowing, shade, bank stabilization, and fine sediment capture.

Riparian conditions approaching RM 11 are generally quite good with dense overstory, tall trees and appropriately stable banks. Between RM 11 and RM 8.75, recently installed fencing is yielding rapid improvement in an area that previously had been in only fair condition.

Riparian Conditions, Lower Watershed. SVRCD’s Incidental Take Permit Application (2005) describes the stretch of the River from RM 7.75 to the mouth as steep, bedrock constrained, hot and dry, and without significant tributaries. Past mining beginning in the late 1800s stripped most of the soil and vegetation from the bedrock adjacent to the stream in this reach. Subsequent livestock usage until 1991 largely prevented recovery from those activities. Since 1991, significant herbaceous and woody vegetation growth has occurred in the canyon, sediment is being trapped, and the channel is gaining shade and bank complexity. Riparian condition is on an improving trend: herbaceous vegetation is vigorous and effective in capturing fine sediment and providing some channel and bank complexity, but will be slow to recruit trees until streambanks acquire sufficient soil to hold adequate moisture.

⁶ See footnote 5.

Riparian Overview. Examples of robust riparian vegetative complexes along the Shasta River are seen on property near the Grenada Irrigation District diversion, adjacent to the bridge over the river on the Grenada/Montague Road, and at the Shasta Valley Wildlife Area, where intact tule/willow/cattail (*Typha*) complexes grade into mature alder/ash/cottonwood and boxelder (*Acer negundo*) stands as overstory trees. These conditions are difficult to find elsewhere. However, given the amount of water diverted from the river, the riparian complex appears remarkably intact in many places, albeit very narrow. Poor conditions appear to be more a result of historic livestock grazing,⁷ timber harvesting and mining, than any chronic de-watering of the river for human use. There are two reasons for this. First, numerous springs in the upper and middle reaches of the river basin provide substantial base flow in the river and its tributaries; second, the river has been allowed to retain much of its original meander pattern within its relatively low stream gradient and avoid the effects of stream channelization. Riparian restoration is generally highly effective in this context, however in the Shasta River, due to the regulation of the instream flows and issues related to soil alkalinity and anaerobic soils (due to saturation from flood irrigation), restoration efforts have been met with limited success.

Special-Status Species

Some species known to occur or considered likely to occur in the vicinity of the Program Area are accorded “special-status” because of their recognized rarity or vulnerability to various causes of habitat loss or population decline. Some of these receive specific protection under the federal Endangered Species Act (ESA) and the California Endangered Species Act (CESA). Others have been designated as “sensitive” based on the expertise of state resource agencies or non-governmental organizations with acknowledged expertise, or policies adopted by the state and by local governmental agencies such as counties, cities, and special districts to meet local conservation objectives. For the purpose of this Draft Environmental Impact Report (EIR), “special-status species” means any species that meets the definition of “endangered, rare or threatened species” in California Environmental Quality Act (CEQA) *Guidelines*, § 15380, as fully defined in the Glossary.

Figure 3.4-2 displays species records from the California Natural Diversity Data Base (CNDDB) for the portion of the Program Area where Program impacts are most likely. In addition to those species listed under CESA, CNDDB includes additional CDFG species of special concern. CDFG species of special concern include those species which CDFG has determined are either declining at a rate that could result in listing or historically occurred in low numbers and known threats to their persistence currently exist. Some CDFG species of special concern are also “special status species” because they meet the definition of “endangered, rare, or threatened” in CEQA *Guidelines*, § 15380. For the purpose of this document, CDFG species of special concern that are also special-status species are referred to as “special-status species”, while CDFG species of special concern that are not also special-status species are referred to as “CDFG species of special concern.” Figure 3.4-2 does not include those species discussed in Chapter 3.3, Biological Resources: Fisheries and Aquatic Habitats.

⁷ See footnote 5

Plant and wildlife species occurring anywhere within the USGS quadrangles that define the Program Area and adjacent quadrangles, and have records in CNDDDB are displayed in **Table 3.4-1**. However, CNDDDB may not include all CESA listed or CDFG species of special concern which occur in an area because it only lists those species for which an observational record has been submitted. The CNDDDB-based table must be modified in two ways to produce a focused list that can be used as part of an environmental analysis under CEQA (Table 3.4-2). First, the list is augmented from CNPS's *Inventory of Rare and Endangered Plants*, published literature, and unpublished sources such as bird lists compiled by Audubon Society chapters, by professional knowledge, and by direct observations from nearby areas with similar habitats (such as the Scott Valley). Second, the list is *reduced* by eliminating those species that will not be affected by the actions of the project being reviewed under CEQA (in this case, the Program and the activities it covers). Also, in this case, the area of potential effect is limited to riparian or wet meadow species and does not, for example, include impacts on furbearing mammals or raptors nesting at higher elevations or away from streams where Program Covered Activities will occur. The analysis is then carried forward in detail for the final list. The list used for this analysis is displayed in **Table 3.4-2** and discussed below. Again, the list does not include those species discussed in Chapter 3.3, Biological Resources: Fisheries and Aquatic Habitats.

Plants

Alkali hymenoxys (*Hymenoxys lemmonii* – CNPS List 2.2; State Rank S2.2)

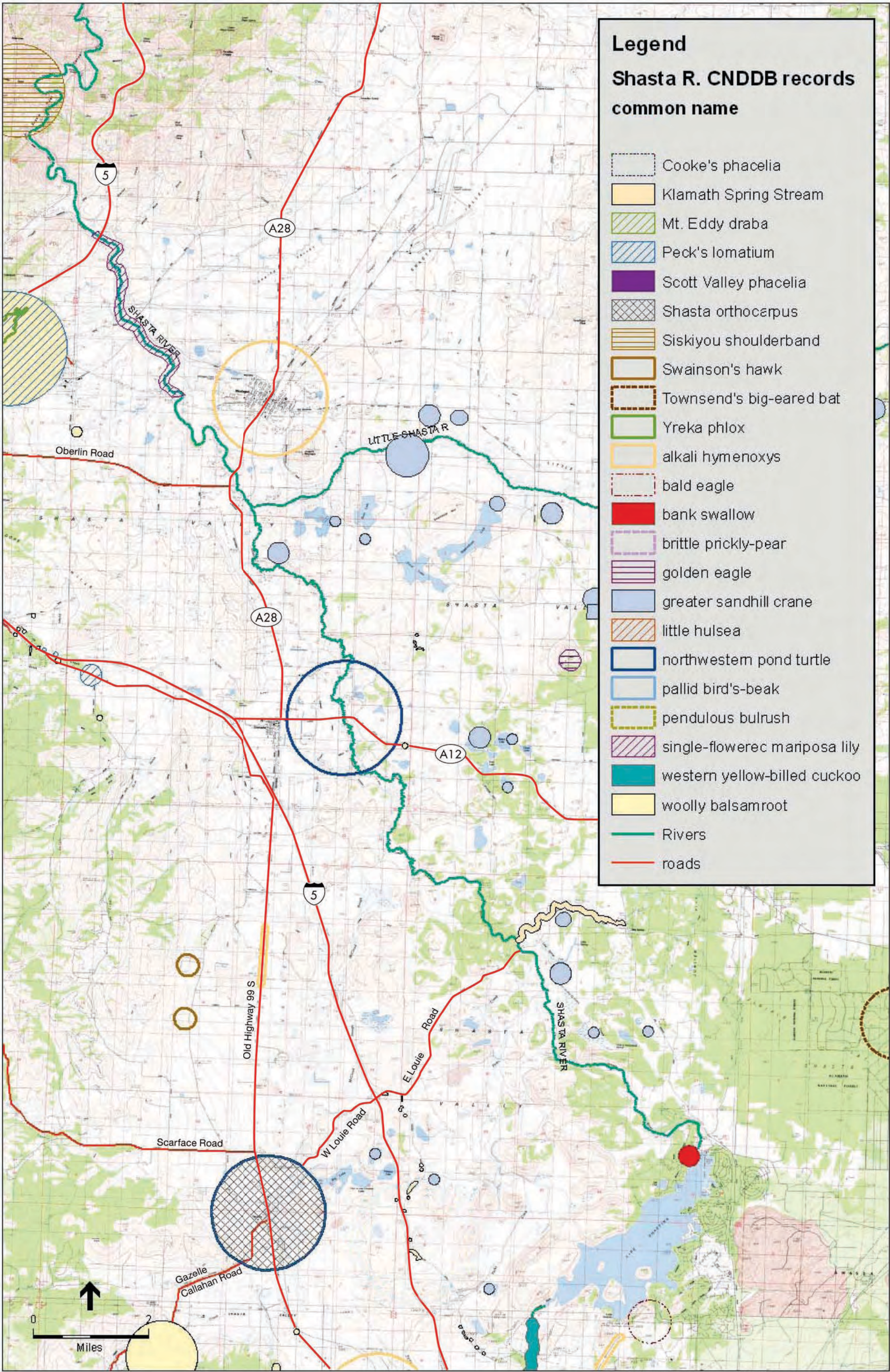
Alkali hymenoxys occurs in Oregon, Utah, Nevada, Arizona, and in Siskiyou County, California. Plants grow in moist or wet alkaline meadows in sagebrush scrub and yellow pine forest communities and at elevations of 787 to 3,280 feet (CNPS, 2006). Five populations of alkali hymenoxys occur in the vicinity of the Program Area, including near the town of Montague. Moreover, these populations are historical collections from 1897 to 1934 and have not been relocated. Suitable habitat exists, but the reported locations are not specific.

Oregon fireweed (*Epilobium oreganum* - CNPS List 1 B.2; State Rank S2.2)

Oregon fireweed is known from northern California, including Siskiyou County, and Oregon. This plant is a perennial herb that occurs in bogs and fens, as well as mesic areas in lower and upper montane coniferous forest at elevations of 1,640 to 7,350 feet. The period of identification for Oregon fireweed is June through September.

Pallid bird's-beak (*Cordylanthus tenuis* spp. *pallescens* - CNPS List 1B.2; State Rank S1.1)

Pallid bird's beak is an annual herb that is sometime parasitic on other plants. The species' known distribution is restricted to Shasta, Sierra, and Siskiyou Counties. Pallid bird's beak occurs on gravelly, volcanic alluvium in lower montane coniferous forest at elevations ranging from 2,200 to 5,400 feet. The species' bloom period is July through September.



**TABLE 3.4-1
SPECIES REPORTED IN THE CALIFORNIA NATURAL DIVERSITY DATABASE FOR ALL PROGRAM
AND ADJACENT USGS QUADRANGLES**

Common Name Scientific Name	Listing Status ESA	Listing Status CESA	CNPS / CDFG Status/ # Occurrences Statewide (for plants)
PLANTS			
Aleppo avens (<i>Geum aleppicum</i>)	None	None	2.2 / S2.2? / 5
Alkali hymenoxys (<i>Hymenoxys lemmonii</i>)	None	None	2.2 / S2.2 / 8
Alpine dusty maidens (<i>Chaenactis douglasii</i> var. <i>alpina</i>)	None	None	2.3 / S2.3? / 8
Applegate stonecrop (<i>Sedum oblancheolatum</i>)	None	None	1B.3 / S1.2 / 9
Ashland thistle (<i>Cirsium ciliolatum</i>)	None	Endangered	2.1 / S1.2 / 5
Blue alpine phacelia (<i>Phacelia sericea</i> var. <i>ciliosa</i>)	None	None	2.3 / S1.3 / 8
Blushing wild buckwheat (<i>Eriogonum ursinum</i> var. <i>erubescens</i>)	None	None	1B.3 / S2.3 / 9
Brittle prickly-pear (<i>Opuntia fragilis</i>)	None	None	2.1 / SH / 1
Broad-nerved hump-moss (<i>Meesia uliginosa</i>)	None	None	2.2 / S2.2 / 22
Brown fox sedge (<i>Carex vulpinoidea</i>)	None	None	2.2 / S2.2 / 16
Canadian buffalo-berry (<i>Shepherdia Canadensis</i>)	None	None	2.2 / S1.2 / 1
Cascade alpine campion (<i>Silene suksdorfii</i>)	None	None	2.3 / S2.3 / 8
Cascade grass-of-Parnassus (<i>Parnassia cirrata</i> var. <i>intermedia</i>)	None	None	2.2 / S2.2 / 13
Cascade stonecrop (<i>Sedum divergens</i>)	None	None	2.3 / S1.3 / 4
Castle Crags harebell (<i>Campanula shetleri</i>)	None	None	1B.3 / S2.3 / 7
Coast fawn lily (<i>Erythronium revolutum</i>)	None	None	2.2 / S2.2 / 50
Columbia yellow cress (<i>Rorippa columbiae</i>)	None	None	1B.2 / S1.1 / 11
Cooke's phacelia (<i>Phacelia cookei</i>)	None	None	1B.1 / S1.1 / 3
Crested potentilla (<i>Potentilla cristae</i>)	None	None	1B.3 / S2.3 / 7

TABLE 3.4-1 (Continued)
SPECIES REPORTED IN THE CALIFORNIA NATURAL DIVERSITY DATABASE FOR ALL PROGRAM
AND ADJACENT USGS QUADRANGLES

Common Name Scientific Name	Listing Status ESA	Listing Status CESA	CNPS / CDFG Status/ # Occurrences Statewide (for plants)
PLANTS (cont.)			
Detling's silverpuffs (<i>Microseris laciniata</i> ssp. <i>detlingii</i>)	None	None	2.2 / S1.2 / 1
English Peak greenbriar (<i>Smilax jamesii</i>)	None	None	1B.3 / S3.2 / 54
Ephemeral monkeyflower (<i>Mimulus evanescens</i>)	None	None	1B.2 / S1.2 / 15
Gentner's fritillary (<i>Fritillaria gentneri</i>)	Endangered	None	1B.1 / S1.1 / 2
Golden draba (<i>Draba aureola</i>)	None	None	1B.3 / S1.3 / 6
Grass alisma (<i>Alisma gramineum</i>)	None	None	2.2 / S1S2 / 12
Great Basin claytonia (<i>Claytonia umbellata</i>)	None	None	2.3 / S1.3 / 5
Greene's mariposa lily (<i>Calochortus greenii</i>)	None	None	1B.2 / S3.2 / 50
Henderson's fawn lily (<i>Erythronium hendersonii</i>)	None	None	2.3 / S1.3 / 4
Henderson's horkelia (<i>Horkelia hendersonii</i>)	None	None	1B.1 / S1.2 / 1
Horned butterwort (<i>Pinguicula vulgaris</i> ssp. <i>macroceras</i>)	None	None	2.2 / S3.2 / 15
Howell's sandwort (<i>Minuartia howellii</i>)	None	None	1B.3 / S3.2 / 20
Howell's triteleia (<i>Triteleia grandiflora</i> var. <i>howellii</i>)	None	None	2.1 / S1.1 / 4
Klamath fawn lily (<i>Erythronium klamathense</i>)	None	None	2.2 / S2.2 / 6
Little hulsea (<i>Hulsea nana</i>)	None	None	2.3 / S2.3 / 20
Little-leaved huckleberry (<i>Vaccinium scoparium</i>)	None	None	2.2 / S2.2? / 19
Marbled wild-ginger (<i>Asarum marmoratum</i>)	None	None	2.3 / S1.3 / 6
Marsh skullcap (<i>Scutellaria galericulata</i>)	None	None	2.2 / S2.2? / 24
Mason's sky pilot (<i>Polemonium chartaceum</i>)	None	None	1B.3 / S1.3 / 15

TABLE 3.4-1 (Continued)
SPECIES REPORTED IN THE CALIFORNIA NATURAL DIVERSITY DATABASE FOR ALL PROGRAM
AND ADJACENT USGS QUADRANGLES

Common Name Scientific Name	Listing Status ESA	Listing Status CESA	CNPS / CDFG Status/ # Occurrences Statewide (for plants)
PLANTS (cont.)			
Mt. Eddy draba (<i>Draba carnosula</i>)	None	None	1B.3 / S2.2 / 13
Mud sedge (<i>Carex limosa</i>)	None	None	2.2 / S3? / 31
Newberry's cinquefoil (<i>Potentilla newberryi</i>)	None	None	2.3 / S2.3? / 14
Nodding vanilla-grass (<i>Hierochloa odorata</i>)	None	None	2.3 / S1.3? / 5
Northern adder's-tongue (<i>Ophioglossum pusillum</i>)	None	None	2.2 / S1.2 / 4
Northwestern moonwort (<i>Botrychium pinnatum</i>)	None	None	2.3 / S1.3? / 5
Oregon fireweed (<i>Epilobium oregonum</i>)	None	None	1B.2 / S2.2 / 43
Pallid bird's-beak (<i>Cordylanthus tenuis</i> ssp. <i>pallidus</i>)	None	None	1B.2 / S1.1 / 36
Parish's alumroot (<i>Heuchera parishii</i>)	None	None	1B.3 / S2.3 / 12
Peck's lomatium (<i>Lomatium peckianum</i>)	None	None	2.2 / S1.2 / 13
Pendulous bulrush (<i>Scirpus pendulus</i>)	None	None	2.2 / S1.2 / 2
Pickering's ivesia (<i>Ivesia pickeringii</i>)	None	None	1B.2 / S2.2 / 12
Pyrola-leaved buckwheat (<i>Eriogonum pyrolifolium</i> var. <i>pyrolifolium</i>)	None	None	2.3 / S2.3 / 12
Rattlesnake fern (<i>Botrychium virginianum</i>)	None	None	2.2 / S1.2 / 10
Scott Mountain bedstraw (<i>Galium serotenum</i> ssp. <i>scotticum</i>)	None	None	1B.2 / S2.2 / 33
Scott Mountain sandwort (<i>Minuartia stolonifera</i>)	None	None	1B.3 / S1.3 / 2
Scott Mountains fawn lily (<i>Erythronium citrinum</i> var. <i>roderickii</i>)	None	None	1B.3 / S1.3 / 46
Scott Valley buckwheat (<i>Eriogonum umbellatum</i> var. <i>lautum</i>)	None	None	1B.1 / S1.1 / 2
Scott Valley phacelia (<i>Phacelia greenei</i>)	None	None	1B.2 / S2.2 / 28

TABLE 3.4-1 (Continued)
SPECIES REPORTED IN THE CALIFORNIA NATURAL DIVERSITY DATABASE FOR ALL PROGRAM
AND ADJACENT USGS QUADRANGLES

Common Name Scientific Name	Listing Status ESA	Listing Status CESA	CNPS / CDFG Status/ # Occurrences Statewide (for plants)
PLANTS (cont.)			
Shasta chaenactis (<i>Chaenactis suffrutescens</i>)	None	None	1B.3 / S3.2? / 25
Shasta orthocarpus (<i>Orthocarpus pachystachyus</i>)	None	None	1B.3 / S1.1 / 4
Showy raillardella (<i>Raillardella pringlei</i>)	None	None	1B.3 / S2.2 / 21
Silky balsamroot (<i>Balsamorhiza sericea</i>)	None	None	1B.3 / S2.3 / 7
Single-flowered mariposa lily (<i>Calochortus monanthus</i>)	None	None	1A / SH / 1
Siskiyou fireweed (<i>Epilobium siskiyouense</i>)	None	None	1B.3 / S2.2 / 45
Siskiyou mariposa lily (<i>Calochortus persistens</i>)	Candidate	Rare	1B.2 / S2.2 / 3
Siskiyou paintbrush (<i>Castilleja miniata</i> ssp. <i>elata</i>)	None	None	2.2 / S2.2 / 30
Siskiyou phacelia (<i>Phacelia leonis</i>)	None	None	1B.3 / S2.2 / 18
Slender-stemmed androsace (<i>Androsace filiformis</i>)	None	None	2.3. / S1? / 2
Subalpine aster (<i>Eurybia merita</i>)	None	None	2.3 / S1.3 / 1
Trinity buckwheat (<i>Eriogonum alpinum</i>)	None	Endangered	1B.2 / S2.2 / 17
Waldo daisy (<i>Erigeron bloomeri</i> var. <i>nudatus</i>)	None	None	2.3 / S2? / 10
Wilkin's harebell (<i>Campanula wilkinsiana</i>)	None	None	1B.2 / S2.2 / 19
Woolly balsamroot (<i>Balsamorhiza lanata</i>)	None	None	1B.2 / S2.2 / 38
Yreka phlox (<i>Phlox hirsute</i>)	Endangered	Endangered	1B.2 / S1.1 / 4
ANIMALS			
American badger (<i>Taxidea taxus</i>)	None	None	SSC
American (=pine) marten (<i>Martes americana</i>)	None	None	

TABLE 3.4-1 (Continued)
SPECIES REPORTED IN THE CALIFORNIA NATURAL DIVERSITY DATABASE FOR ALL PROGRAM
AND ADJACENT USGS QUADRANGLES

Common Name Scientific Name	Listing Status ESA	Listing Status CESA	CNPS / CDFG Status/ # Occurrences Statewide (for plants)
ANIMALS (cont.)			
American peregrine falcon * (<i>Falco peregrinus anatum</i>)	Delisted	Endangered	
Bald eagle (<i>Haliaeetus leucocephalus</i>)	Delisted	Endangered	
Bank swallow (<i>Riparia riparia</i>)	None	Threatened	
California wolverine (<i>Gulo gulo</i>)	None	Threatened	
Cascades frog (<i>Rana cascadae</i>)	None	None	SSC
Foothill yellow-legged frog (<i>Rana boylei</i>)	None	None	SSC
Golden eagle (<i>Aquila chrysaetos</i>)	None	None	
Gray-headed pika (<i>Ochotona princeps schisticeps</i>)	None	None	
Greater sandhill crane (<i>Grus canadensis tabida</i>)	None	Threatened	
Northern goshawk (<i>Accipiter gentilis</i>)	None	None	SSC
Northwestern pond turtle (<i>Acinemys marmorata marmorata</i>)	None	None	SSC
Osprey (<i>Pandion haliaetus</i>)	None	None	SSC
Pacific fisher (<i>Martes pennanti</i>)	Candidate	None	SSC
Pallid bat (<i>Antrozous pallidus</i>)	None	None	SSC
Prairie falcon (<i>Falco mexicanus</i>)	None	None	SSC
Scott Bar salamander ** (<i>Plethodon asupak</i>)	None	Threatened	
Sierra Nevada red fox (<i>Vulpes vulpes necator</i>)	None	Threatened	
Silver-haired bat (<i>Lasionycteris noctivagans</i>)	None	None	
Siskiyou Mountains salamander (<i>Plethodon stormi</i>)	None	Threatened	

TABLE 3.4-1 (Continued)
SPECIES REPORTED IN THE CALIFORNIA NATURAL DIVERSITY DATABASE FOR ALL PROGRAM
AND ADJACENT USGS QUADRANGLES

Common Name <i>Scientific Name</i>	Listing Status ESA	Listing Status CESA	CNPS / CDFG Status/ # Occurrences Statewide (for plants)
ANIMALS (cont.)			
Siskiyou shoulderband (<i>Monadenia chaceana</i>)	None	None	
Spotted bat (<i>Euderma maculatum</i>)	None	None	SSC
Swainson's hawk (<i>Buteo swainsoni</i>)	None	Threatened	
Topaz juga (<i>Juga acutifilosa</i>)	None	None	
Townsend's big-eared bat (<i>Corynorhinus townsendii</i>)	None	None	SSC
Western mastiff bat (<i>Eumops perotis californicus</i>)	None	None	SSC
Western tailed frog (<i>Ascaphus truei</i>)	None	None	SSC
Western yellow-billed cuckoo (<i>Coccyzus americanus occidentalis</i>)	Candidate	Endangered	
Willow flycatcher (<i>Empidonax traillii</i>)	None	Endangered	

* The Fish and Game Commission has received and is proceeding with a review of a delisting request for the American peregrine falcon.

** As recognized by the Fish and Game Commission, the Scott Bar salamander is currently protected under CESA as a sub-population of the Siskiyou Mountains salamander (*Plethodon stormi*). (See California Code Regulations, title 14, §670.5, subd. (b)(3)(A); Cal. Reg. Notice Register 2007, No. 21-Z, p. 916 (May 25, 2007)).

ESA = federal Endangered Species Act
CESA = California Endangered Species Act
SSC = CDFG Species of Special Concern

California Native Plant Society codes:
List 1A=Plants presumed extinct in California
List 1B=Plants rare, threatened, or endangered in California and elsewhere
List 2= Plants rare, threatened, or endangered in California but more common elsewhere
List 3= Plants about which more information is needed
List 4= Plants of limited distribution

Threat Code extensions

- .1 – Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)
- .2 – Fairly endangered in California (20-80% occurrences threatened)
- .3 – Not very endangered in California (<20% of occurrences threatened or no current threats known)

Note that all List 1A (presumed extinct in California) and some List 3 (need more information- a review list) plants lacking any threat information receive no threat code extension. Also, these Threat Code guidelines represent a starting point in the assessment of threat level. Other factors, such as habitat vulnerability and specificity, distribution, and condition of occurrences, are also considered in setting the Threat Code.

CDFG State Ranking Codes

S1 = Less than 6 element occurrences (Eos) OR less than 1,000 individuals OR less than 2,000 acres
S1.1 = very threatened
S1.2 = threatened
S1.3 = no current threats known
S2 = 6-20 Eos OR 1,000-3,000 individuals OR 2,000-10,000 acres
S2.1 = very threatened
S2.2 = threatened; S2.3 = no current threats known

S3 = 21-80 Eos or 3,000-10,000 individuals OR 10,000-50,000 acres
S3.1 = very threatened
S3.2 = threatened
S3.3 = no current threats known
SH = possibly extirpated (historical)

TABLE 3.4-2
SPECIAL-STATUS SPECIES ANALYZED FOR IMPACTS WITHIN THE PROGRAM AREA

Common Name <i>Scientific Name</i>	Listing Status ESA	Listing Status CESA	CNPS / CDFG Status	Occurrence Reported in the Program Area/Potential for Occurrence
Plants				
Alkali hymenoxys (<i>Hymenoxys lemmonii</i>)	None	None	2.2/ S2.2	Known to occur
Oregon fireweed (<i>Epilobium oregonum</i>)	None	None	1B.2/ S2.2	Low
Pallid bird's-beak (<i>Cordylanthus tenuis</i> spp. <i>Pallescens</i>)	None	None	1B.2/ S1.1	Low
Peck's lomatium (<i>Lomatium peckianum</i>)	None	None	2.2/ S1.2	Moderate
Pendulous bulrush (<i>Scirpus pendulus</i>)	None	None	2.2/ S1.2	Known to occur
Pickering's ivesia (<i>Ivesia pickeringii</i>)	None	None	1B.2/ S2.2	Moderate
Rattlesnake fern (<i>Botrychium virginianum</i>)	None	None	2.2/ S1.2	Low
Shasta chaenactis (<i>Chaenactis suffrutescens</i>)	None	None	1B.3/S3.2	Low
Shasta orthocarpus (<i>Orthocarpus pachystachyus</i>)	None	None	1B.1/ S1.1	Known to occur
Single-flowered mariposa lily (<i>Calochortus monanthus</i>)	None	None	1A / SH / 1	Known to have occurred; presumed extinct
Siskiyou mariposa lily (<i>Calochortus persistens</i>)	None	None	1B.2/ 2.2	Low
Tufted saxifrage (<i>Saxifraga cespitosa</i>)	None	None	2.3/ 1.3	Low
Woolly balsamroot (<i>Balsamorhiza hookeri</i> var. <i>lanata</i>)	None	None	1B.2/ S2.2	Known to occur
Birds				
Bank swallow (<i>Riparia riparia</i>)	None	Threatened	None	Known to occur
Greater sandhill crane (<i>Grus canadensis tabida</i>)	None	Threatened	Fully Protected Species	Known to occur
Swainson's hawk (<i>Buteo swainsoni</i>)	None	Threatened	None	Known to occur
Western yellow-billed cuckoo (<i>Coccyzus americanus</i> <i>occidentalis</i>)	Candidate	Endangered	None	Very Low
Willow flycatcher (<i>Empidonax traillii</i>)	None	Endangered	None	Known to occur
Yellow warbler (<i>Dendroica petechia brewsteri</i>)	None	None	SSC	Known to occur

For explanation of codes, see Table 3.4-1.

Plants (continued)**Peck's lomatium (*Lomatium peckianum* – CNPS List 2.2)**

Peck's lomatium occurs in Oregon and Siskiyou County, California. Plants occur on rocky clay or clay-loam flats and slopes in the sagebrush-juniper, foothill woodland, and yellow pine forest communities. Plants are found at elevations ranging from 2,296 to 5,904 feet. Records for the species are near Yreka and Julian Creek (CDFG, 2008).

Pendulous bulrush (*Scirpus pendulus* – CNPS List 2.2)

Pendulous bulrush occurs throughout the United States, but is found only in Siskiyou County, California. Plants occur at 2,624 to 3,280 feet in marshes, swamps, moist meadows, ditches and are often associated with calcareous substrates. Under natural conditions, pendulous bulrush occurs almost always in wetlands. Plants have been recorded in Shasta Valley (CNPS, 2006).

Pickering's ivesia (*Ivesia pickeringii* – CNPS List 1B.2; State Rank 2.2)

Pickering's ivesia occurs only in two counties in California: Siskiyou and Trinity. Plants occur in ephemeral drainages and seasonally wet grassy slopes in mixed conifer and yellow pine forests on ultramafic soils. Under natural conditions, Pickering's ivesia occurs almost always in wetlands at elevations of 2,624 to 4,593 feet. Flowering occurs from June to August (CNPS, 2006).

Rattlesnake fern (*Botrychium virginianum* – CNPS List 2.2; State Rank S1.2)

Rattlesnake fern is a perennial herbaceous species known from locations throughout the western United States. However, in California it is only documented from Mendocino, Shasta, and Siskiyou Counties. This species grows in bogs and fens, meadows and seeps, riparian forest, and in mesic micro-habitats in lower montane coniferous forest. The period of identification for rattlesnake fern is June through September and the species can be found at elevations ranging from 2,400 to 4,300 feet.

Shasta chaenactis (*Chaenactis suffrutescens* – CNPS List 1B.3; State Rank 3.2)

Shasta chaenactis is present in Siskiyou and Trinity Counties. Plants occur on rocky open slopes, cobbled river terraces and on ultramafic soil or glacial till with ultramafics included. Plants also occur on upper montane coniferous forest habitat. Elevations range from 2,492 to 9,184 feet (CNPS, 2006).

Shasta orthocarpus (*Orthocarpus pachystachyus* – CNPS List 1B.1)

Shasta orthocarpus is endemic to California and is found only in Siskiyou County. Plants occur on ultramafic alluvium with sagebrush and native bunchgrasses, and may be found in meadows and seeps. Elevations range from 2,755 to 2,788 feet (CNPS, 2006). Records for the species are near Yreka (CDFG, 2008).

Single-flowered mariposa lily (*Calochortus monanthus* – CNPS List 1A, State Rank SH)

Single-flowered mariposa lily was documented historically from Siskiyou County but is currently believed to be extinct. The species is known only from the type collection, made in 1876. This

perennial bulbiferous herb was blooming when it was collected in June, and was found at an elevation of approximately 2,600 feet. The location documented for the species is “meadows on Shasta River” in the Montague USGS 7.5 minute quadrangle (CDFG, 2008).

Siskiyou mariposa lily (*Calochortus persistens* – CNPS List 1B.2, State Rank S2.2)

Siskiyou mariposa lily is documented only from Siskiyou County, California, but occurs in Oregon as well. This perennial bulbiferous herb grows in rocky soils in lower montane and North Coast coniferous forest types. The period of identification for this mariposa lily is June to July and it can be found at elevations ranging from 3,280 to 6,100 feet.

Tufted saxifrage (*Saxifraga cespitosa* – CNPS List 2.3, State Rank S1.3)

Tufted saxifrage is known only from Siskiyou and Modoc counties in California, although it also occurs in Oregon, Washington, Nevada, and Arizona. This is a perennial herb that grows in rocky areas in meadows and seeps. Tufted saxifrage blooms from June through September and can be found at elevations ranging from 3,000 to 6,500 feet.

Woolly balsamroot (*Balsamorhiza hookeri* var. *lanata* – CNPS List 1B.2; State Rank 2.2)

Woolly balsamroot is endemic to California and is found in four counties: Siskiyou, Sierra, Nevada, and Alpine. Plants occur in cismontane woodlands, grassy flats, and open pine or oak woodlands on volcanic or serpentine substrates. Woolly balsamroot is recorded at multiple sites in the Program Area (see Figure 3.4-2) at elevations ranging from 2,625 to 6,217 feet.

Wildlife

Birds

Bank swallow (*Riparia riparia* – California State Threatened⁸). The bank swallow occurs as a breeding species in California in a hundred or so widely distributed nesting colonies in alluvial soils along rivers, streams, lakes, and ocean coasts. It is largely found in riparian ecosystems, particularly rivers in the larger lowland valleys of northern California, nesting colonies are located in vertical banks or bluffs in friable soils. This species is recorded along the Shasta River just below Lake Shastina.

Greater sandhill crane (*Grus canadensis tabida* – California State Threatened and Fully Protected⁹). Historically, greater sandhill cranes nested in eastern Siskiyou County and northeastern Shasta County southward to Honey Lake in Lassen County. Presently, greater sandhill cranes nest in Lassen, Modoc, Plumas, Shasta, Sierra, and Siskiyou Counties. In California, greater sandhill cranes establish territories in wet meadows that are often interspersed with emergent marsh. California birds tend to nest in rather open habitat; favorable roost sites and an abundance of cereal grain crops characterize the cranes' Central Valley wintering ground. This species continues to experience threats on both wintering and breeding grounds by agricultural

⁸ “California State Threatened” means the species is listed as threatened under CESA.

⁹ A “fully protected” species is a species listed under Fish and Game Code section 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), or 5515 (fish). Take of a fully protected species is prohibited except for scientific research and, as to fully protected birds, the protection of livestock.

and residential conversion of habitat, predation, human disturbance, and collisions with power lines. The Shasta Valley population is relatively new, since the 1980s, and was considered a westward expansion of their breeding range at that time (Smith, 1999). There have been several recorded observations of greater sandhill cranes within the Shasta Valley and in the vicinity of the Program Area (CDFG, 2008). Nests mapped in the year 2000 are displayed in Figure 3.4-2. There are no more recent published data, but the species was observed by CDFG biologists in the spring of 2008.

Swainson's hawk (*Buteo swainsoni* – California State Threatened). Swainson's hawks often nest peripherally to riparian systems of the as well as utilizing lone trees or groves of trees in agricultural fields. Suitable foraging areas include native grasslands or lightly grazed pastures, alfalfa and other hay crops, and certain grain and row croplands. They are known to occur in the Program Area.

Western yellow-billed cuckoo (*Coccyzus americanus occidentalis* – California State Endangered¹⁰). A slender brown bird, ranging from 11 to 13 inches in length, the cuckoo typically nests in horizontal branches of willows in well-hidden locations two to 12 feet above ground. It requires a dense riparian forest and woodlands dominated by cottonwoods and/or willows with an associated understory composed of blackberry, nettles, or wild grape (Riparian Habitat Joint Venture, 2004). The species is probably extirpated from Shasta Valley, but CDFG routinely requires surveys for the species when working in riparian habitat along the Shasta Valley.

Willow flycatcher (*Empidonax traillii* – California State Endangered). The willow flycatcher, a small insect-eating bird of the tyrant flycatcher family, was formerly a common summer resident throughout California. Its breeding range extended wherever extensive willow thickets occurred. The species has now been eliminated as a breeding bird from most of its former range in California. Only small, scattered populations remain in isolated meadows of the Sierra Nevada and in Southern California (Remsen, 1978), but two nests were reported by CDFG from the Shasta Valley Wildlife Area in 2007.

Yellow warbler (*Dendroica petechia brewsteri* – CDFG Species of Special Concern). This species utilizes riparian deciduous habitats with willows or other dense foliage and a low, open canopy. Nest parasitism by brown-headed cowbirds (*Molothrus ater*) has apparently been a major cause of the drastic decline in numbers in lowland localities in recent decades (Zeiner et al., 1990). Parasitism increases when the riparian vegetation is in poor condition. This species is known to occur in the Program Area.

Species Eliminated From Further Consideration

Potential impacts to common plant and wildlife species were determined by CDFG to be less than significant based on the abundance of the species, the small area disturbed by the Covered Activities, and/or the ability of wildlife to move away from any disturbance. CDFG species of

¹⁰ "California State Endangered" means the species is listed as endangered under CESA.

special concern which could occur in the vicinity of Covered Activity sites include northwestern pond turtle (*Actinemys marmorata marmorata*), long-eared owl (*Asio otus*), northern harrier (*Circus cyaneus*), yellow-breasted chat (*Icteria virens*), and American badger (*Taxidea taxus*). CDFG has determined the Program's impacts on these species to be less than significant because the potential for any one of them to be present at a project site is low, the Program's timing restrictions for instream work (July 1 to October 31) would avoid potential impacts to nests and den sites, and their ability to move away from and avoid areas of active construction.

The California red-legged frog (*Rana aurora draytonii*) is included in the group of species listed under ESA and identified by USFWS as potentially within Siskiyou County. This is apparently an expression of a hypothetical historical range, which included the Sierra Nevada from Shasta County south, but these populations have been fragmented and have nearly disappeared (USFWS, 2002). The Program Area is located outside of the current range of the species. There are no records of this species in Siskiyou County in the CNDDDB database. During the preparation of this Draft EIR, USFWS added the vernal pool fairy shrimp (*Branchinecta lynchi*) to the Siskiyou County list of federally threatened or endangered species. It had been considered previously extant only from Mount Shasta south. Vernal pools will not be impacted by the Program's Covered Activities.

Jurisdictional Wetlands in the Program Area

Wetlands are ecologically productive habitats that support a rich variety of both plant and animal life. The importance and sensitivity of wetlands has increased as a result of their value as recharge areas and filters for water supplies and widespread filling and destruction to enable urban and agricultural development.

Federal Definition of Wetland

The U.S. Fish and Wildlife Service (USFWS) and the U.S. Army Corps of Engineers (Corps) define "wetland" differently. As defined by USFWS, "[Wetlands are] lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification, wetlands must have one or more of the following attributes: 1) at least periodically, the land supports predominantly hydrophytes; 2) the substrate is predominantly undrained hydric soil; and 3) the substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season each year (Cowardin et al., 1979).¹¹ By contrast, the Corps defines "wetland" to include only those areas containing hydrophytic vegetation, hydric soils, *and* wetland hydrology. The Corps' definition states: "those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas." (33 Code of Federal Regulations, § 328.3(b); 40 Code of Federal Regulations § 320.3(t).)

¹¹ The definition is also used by the California Coastal Commission and, at the federal level outside the jurisdiction of the CWA, by USFWS and the National Park Service.

State Definition of Wetland

At least for purposes of the California Wildlife Protection Act of 1990 in the Fish and Game Code, wetlands are defined as: “lands which may be covered periodically or permanently with shallow water and which include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, fens and vernal pools” (Fish and Game Code, § 2785, subd. (g)). The purpose of the act is to provide funds to acquire, enhance, or restore habitat, including wetlands.

On March 9, 1987, the California Fish and Game Commission adopted a wetlands policy. As part of its policy, the Commission adopted USFWS’ definition of “wetland,” described above. However, as the Commission stated, its wetlands policy is not a regulatory program.

Wetlands as Analyzed in this Chapter

This Chapter addresses only those wetland resources in the Program Area that are subject to state and/or federal jurisdiction and have an ecological function supporting plants and terrestrial animals. Chapter 3.2 discusses hydrology and water quality. For this Draft EIR, National Wetlands Inventory (NWI) maps were used to identify wetlands (including manmade wetlands) in the Program Area. NWI maps are based on the Corps’ definition of wetlands (**Figure 3.4-3**) but they have not been assessed *in situ*. As a result, they provide an overview useful in displaying the general extent of jurisdictional wetlands rather than a formal determination.

The mainstem of the Shasta River and all of its named tributaries are “riverine” habitat as mapped by the NWI under the Corps’ jurisdiction. Naturally flooded wet meadows (*Freshwater Emergent Wetlands* in Figure 3.4-3) that occur throughout the valley, especially in the southern portion, could constitute wetlands subject to the Corps’ jurisdiction, as well, because they are clearly connected with the Shasta River. However, NWI maps do not have the accuracy of ground-based delineations. Other more isolated ponds and forested wetlands that might be under state jurisdiction would need to be delineated and reviewed by the Corps before a determination can be made as to their federal status.

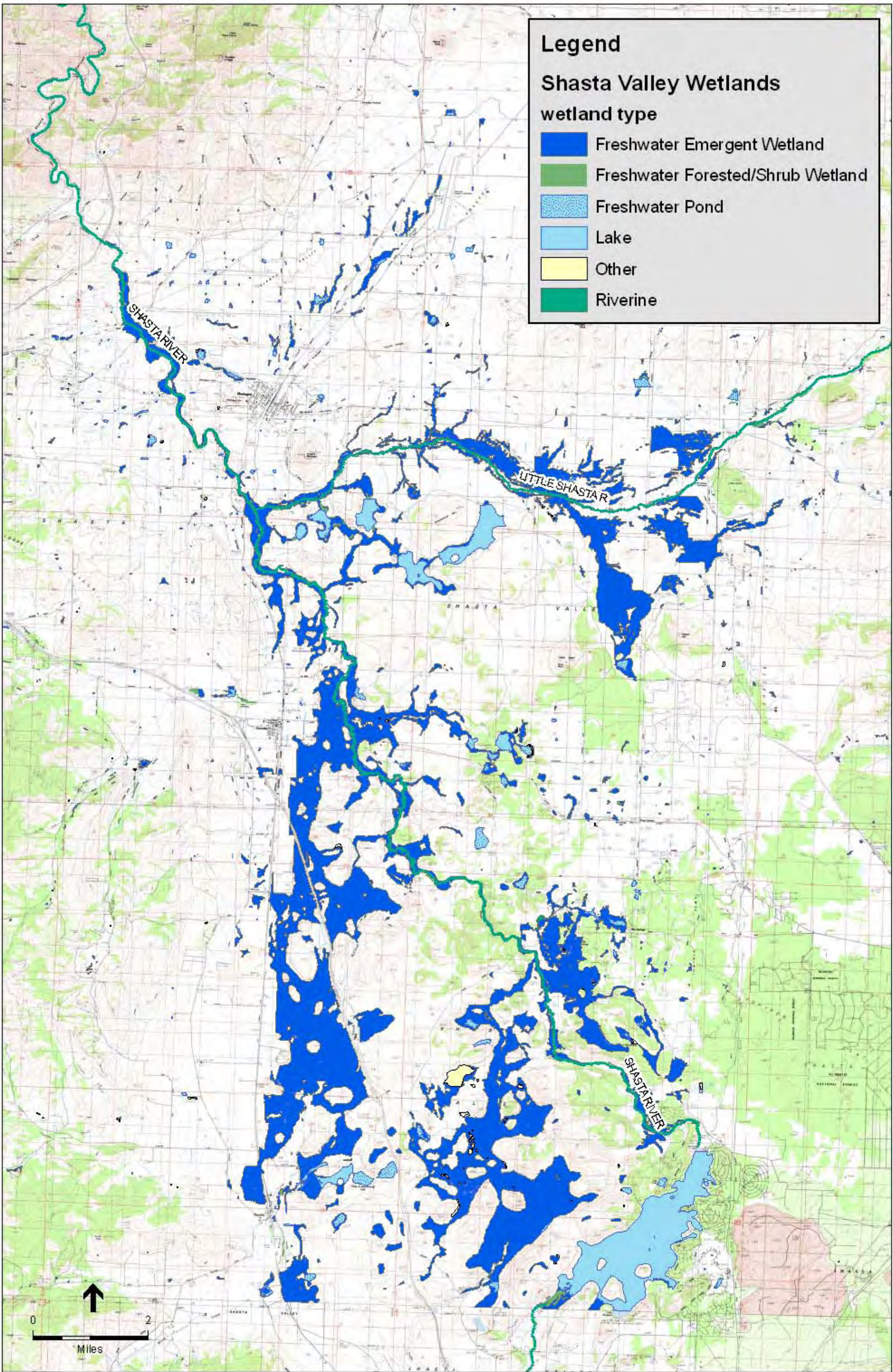
3.4.2 Regulatory Framework

Federal and State Regulation of Botany and Wildlife

In addition to ESA and CESA, described in Section 3.3.2 in Chapter 3.3, Biological Resources: Fisheries and Aquatic Habitat, the statutes identified below apply to the species evaluated in this Chapter.

The Migratory Bird Treaty Act (16 U.S.C. § 703) prohibits killing, possessing, or trading in migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. This act applies to whole birds, parts of birds, and bird nests and eggs.

The California Native Plant Protection Act of 1977 (NPPA) (Fish and Game Code, § 1900-1913) directs CDFG to “preserve, protect and enhance endangered and rare native plants of this state.”



SOURCE: USFWS National Wetlands Inventory, 2006

Shasta River Watershed-wide Permitting Program . D206063

Figure 3.4-3

Potential Wetlands in the Shasta Valley and Vicinity

(Fish and Game Code, § 1900.) NPPA, authorizes the Commission to designate native plants as “endangered” or “rare” and to protect endangered and rare plants from take.

Fish and Game Code, § 3503 makes it “unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto.”

Fish and Game Code, § 3503.5 makes it “unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto.” This applies to red-tailed hawks, white-tailed kites, burrowing owls, and other birds of prey.

Fish and Game Code, § 3511 prohibits the take or possession of fully protected birds, except for scientific research or to protect livestock. As mentioned above, the greater sandhill crane is a fully protected bird.

Fish and Game Code, § 3513 prohibits the take or possession of any nongame migratory bird.

Fish and Game Code, § 3800 generally prohibits the take of any nongame bird with some exceptions. Nongame birds are birds occurring naturally in California that are not resident game birds, migratory game birds, or fully protected birds.

Federal and State Regulation of Wetlands

Federal Regulation of Activities in Wetlands

The regulations and policies of various federal agencies, including the Corps, U.S. Environmental Protection Agency (USEPA), and USFWS, mandate that the filling of wetlands be avoided unless it can be demonstrated that no practicable alternatives exist. The Corps is mainly responsible for regulating activities that could affect the wetlands identified in the Program Area through the issuance of permits under Clean Water Act (CWA) section 404 (33 U.S.C. § 1251 *et seq.*), USEPA, USFWS, and several other federal agencies provide comments on section 404 permit applications. USEPA provides the primary criteria for evaluating the biological impacts of Corps (section 404) permit actions in wetlands.

State Regulation of Activities in Wetlands

The State’s authority in regulating activities that could affect wetlands identified in the Program Area resides primarily with the State Water Resources Control Board (SWRCB). SWRCB normally regulates impacts to wetlands through the water quality certification process under CWA section 401. Under that process, SWRCB, acting through its Regional Water Quality Control Boards (RWQCB), must certify that a federal permitting action (including the issuance of a CWA section 404 permit) meets state water quality objectives in accordance with CWA section 401. In addition, under the Porter-Cologne Water Quality Control Act (Water Code, § 13000 *et seq.*) RWQCB has the authority to regulate activities that could impact the beneficial use of surface waters including the ability of wetlands to provide wildlife habitat and support

plant or animal species identified under state or federal laws as rare, threatened, or endangered. Also, in 2004, SWRCB approved Order No. 2004-0004-DWQ, Statewide General Waste Discharge Requirements for Dredged or Fill Discharges to Waters Deemed by the U.S. Army Corps of Engineers to be Outside of Federal Jurisdiction (General Dredge and Fill WDRs). The issuance of General Dredge and Fill WDRs applies to the discharge of small amounts of dredge and fill to wetlands (and other water bodies) that are not subject to CWA sections 401 and 404 (see Chapter 3.2.3 for a general discussion of CWA and the Porter-Cologne Water Quality Control Act.)

CDFG does not have direct permitting authority over activities that could impact wetlands, but CDFG would have indirect authority over such activities if they were also subject to Fish and Game Code, § 1600 *et seq.* or CESA. Also, CDFG may comment on Corps permit actions under the Fish and Wildlife Coordination Act and as a trustee agency under CEQA.

Local Regulations, Goals and Policies Relating to Botany, Wildlife, and Wetlands

Siskiyou County General Plan

The Conservation Element of the Siskiyou County General Plan includes general objectives relating to biological resources. These objectives include: 1) “to preserve, protect and manage the Forest Lands as both wild habitat and a productive economic resource”; and 2) “to preserve and maintain streams, lakes and forest open space as a means of providing natural habitat for species of wildlife.” There are no Habitat Conservation Plans or other approved governmental habitat plans that involve lands in the Program Area.

3.4.3 Impacts and Mitigation Measures

Significance Criteria

To determine the level of significance of an identified impact, the criteria outlined in the CEQA *Guidelines* and Appendix G in the CEQA *Guidelines* were used. The following is a discussion of the approach used to determine whether the Program could have a significant effect on plants and wildlife and their habitats.

Under CEQA *Guidelines*, § 15065(a), if a project “has the potential to substantially degrade the quality of the environment; substantially reduce the habitat of a fish and wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; substantially reduce the number or restrict the range of an endangered, rare or threatened species”¹² the lead agency must prepare an EIR for the project (CEQA *Guidelines*, § 15065, subds. (a), (a)(1)). CEQA *Guidelines*, § 15206(b)(5) specifies that a project shall be deemed to be of statewide, regional, or area-wide significance if it “would substantially affect sensitive wildlife habitats including but not limited to riparian lands, wetlands, bays, estuaries, marshes, and habitats for rare and endangered species as defined by CEQA *Guidelines*, § 15380”

¹² “Endangered, rare, or threatened species” is defined in the Glossary.

(California Code Regulations, title 14, § 15065, subd. (b), (b)(5)). “Endangered, rare, or threatened species” and species that meet the definition of an endangered, rare, or threatened species under CEQA *Guidelines*, § 15380 are collectively referred to as special-status species in this Draft EIR.

In addition to the significance criteria in Appendix G for biological resources (discussed below), for the purpose of this analysis, the criteria in CEQA *Guidelines*, §§ 15065(a)(1) and 15206(b)(5) were used to determine whether any effect of the Program on terrestrial wildlife, botanical, and wetland resources could be significant. Hence, any effect of the Program that would “substantially degrade the quality of the environment,” “substantially reduce the habitat of a fish or wildlife species,” and/or “substantially affect sensitive wildlife habitats,” constitute a significant effect for the purpose of this impact analysis. The Program would “substantially degrade the quality of the environment” if it could render currently suitable plant and/or wildlife habitat unsuitable. The Program would “substantially reduce the habitat of a fish or wildlife species” if it could cause an overall reduction in current habitat availability (e.g., through removal of riparian vegetation) or suitability. The Program would “substantially affect sensitive wildlife habitats” if it could adversely alter the current use of a habitat area (e.g., removal of a nesting trees). Also for the purpose of this impact analysis, an overall reduction of the current extent or ecological function of plant and/or wildlife habitat caused by the Program would constitute a “substantial, or potentially substantial, adverse change in . . . the physical conditions [in the Program Area],” and therefore would be considered a significant effect (CEQA *Guidelines*, § 15382).

In accordance with Appendix G in the CEQA *Guidelines*, the Program would have a significant effect on the environment if it could:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFG or USFWS (or National Marine Fisheries Service (NMFS) in the case of marine and anadromous species). For purposes of this analysis, substantial adverse effects on species are defined as effects that result in mortality of a substantial number of individuals or habitat modifications that would reduce the overall suitability of the habitat.
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFG or USFWS. For purposes of this analysis, substantial adverse effects on sensitive natural communities are defined as effects that result in the overall reduction of the current extent or ecological function of the community.
- Have a substantial adverse effect on federally protected wetlands as defined by Clean Water Act section 404 (including, but not limited to, marshes and vernal pools) through direct removal, filling, hydrological interruption, or other means. For purposes of this analysis, substantial adverse effects on federally protected wetlands are defined as effects that result in the overall reduction of the current extent or ecological function of wetlands.
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. For purposes of this analysis, a fundamental conflict with a local plan or ordinance is defined as any action that substantially conflicts with the terms of such policies or ordinances.
- Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan. For purposes of this analysis, a fundamental conflict with an adopted habitat conservation plan is defined as any action that would substantially conflict with the terms of such a plan.

Impact Analysis

Impact 3.4-1: The Program could result in impacts to special-status plant or animal species (Significant).

The Program could result in impacts to special-status plant or animal species for the following Covered Activities:

- Installation, operation, and maintenance of fish screens;
- Installation of instream and erosion control structures;
- Relocation of existing water diversion structures;
- Installation of fencing;¹³
- Riparian restoration and revegetation; and
- Maintenance of installed structures.

Direct mortality to special-status plant species can result from removal of individuals or their seed banks. Special-status animals can be killed by vehicles and equipment, their burrows or other retreats could be crushed, or they could be killed if buried by new or maintained instream structures. Flow modification can dry-out downstream seasonal ponds in which aquatic animals live, or pools in which the larval stages of amphibians are developing. Larvae and other organisms can be entrained in pumps. Noise and human activity, during installation and maintenance of structures or at equipment staging areas, also has the potential to cause breeding animals to abandon their nests or their young.

Pendulous bulrush, Shasta orthocarpus, sandhill crane, Swainson's hawk, willow flycatcher, and bank swallow are the special-status species most likely to occur in the areas where the above-described Covered Activities could take place. Impacts on these species represent potentially significant impacts because they are restricted in number and/or range or are dependent on habitats which are limited in extent.

Large-scale habitat reduction could theoretically be significant for other species, especially other riparian nesting birds, but substantial effects at this scale are not likely as part of the Program.

¹³ A scoping comment requested clarification of the width of riparian buffer. As noted in the ITP (Additional SVRCD and sub-permittee Avoidance and Minimization Obligation E), the sub-permittees must build any exclusion fencing approximately 35 feet from the edge of the streambank. This was not intended to imply that 35 feet was a sufficient width for all riparian functions.

Mitigation Measures Proposed as Part of the Program

Mitigation Measure 3.4-1a: ITP General Conditions (g) and (h) (Article XIII.E.1) stipulate that instream work on structural restoration projects and instream equipment operations shall occur from July 1 to October 31. This restricts noise and other sources of disturbance during most of the nesting season for special-status riparian birds.

Mitigation Measure 3.4-1b: ITP Additional SVRCD and Sub-Permittee Avoidance and Minimization Obligation B.1 (Article XV) requires that water removed directly from the stream by means of a pump shall have inlets properly screened per CDFG/NMFS fish screen standards (NMFS, 1997). These standards specify a mesh size that would avoid entrainment of special-status species in pumps.

Mitigation Measure 3.4-1c: Master List of Terms and Conditions (MLTC) Condition 100 stipulates that, prior to ground-disturbing activities, work sites shall be surveyed for special-status plant species by a qualified botanist. Special-status plant surveys shall be conducted following the *Guidelines for Assessing Effects of Proposed Projects on Rare, Threatened and Endangered Plants and Natural Communities* (CDFG, 2000). The survey report, including the methodology and survey findings, shall be provided to CDFG for review and approval prior to any ground-disturbing activities. MLTC condition 101 further states that if any special-status plant species are identified at a work site, CDFG shall identify one or more of the following protective measures, but not limited to these measures, to be implemented at the project site before work may proceed:

- Fencing to prevent accidental disturbance of special-status plants during construction;
- On-site monitoring by a qualified botanist during construction to assure that special-status plants are not disturbed; and/or
- Redesign of proposed work to avoid disturbance of special-status plant species.

Mitigation Measures Identified in this Draft EIR

Mitigation Measure 3.4-1d: The permissible work window for individual work sites shall be further constrained as necessary to avoid the nesting or breeding seasons of special-status birds and terrestrial animals for which CDFG determines impacts could be significant. At most sites with the potential for significant impacts to nesting special-status birds work shall be conditioned to start after July 31 when the young have typically fledged, potential impacts will be avoided, and no surveys will be required. Where work after July 31 would still have the potential to significantly impact nesting special-status birds, work shall not begin until the potential for impacts no longer exists. CDFG may advance the window at individual work sites if:

- There is no suitable habitat present. "Suitable habitat" in this sense varies between species and would be determined by CDFG, for example, for the willow flycatcher in accordance with Figura (2007); or,
- Surveys determine nesting birds will not be affected, either because the animals are not present or the nests are safely distant or otherwise screened from the activity.

In addition, to prevent impacts to bank swallow nesting areas, no fencing or planting action will be allowed to change the cross-sectional profile of the stream (e.g., lay a cutbank back to an angle of repose for riparian planting) until after a survey is conducted that establishes that bank swallows are not using the area to be affected. No area supporting bank swallows shall be manipulated in any way.

To avoid potential impacts to sandhill crane nesting and rearing activities, surveys for active nests shall be performed by a qualified biologist prior to the start of a Covered Activity when a known sandhill crane nesting territory is located within 0.5 mile of the project site and the activity will occur during the typical nesting and rearing season (March 1 to August 15). If active nests are found, a no-disturbance buffer radius of up to 0.5 mile will be required around the nest. The actual size of the buffer may be modified based on an evaluation by a qualified biologist of the sensitivity of the birds to the level of project disturbance. The no-disturbance buffer may be lifted prior to August 15, if it is determined safe to do so by a qualified biologist and approved by CDFG. Any reduction in the 0.5 mile buffer radius will be approved in writing by CDFG.

To avoid potential impacts to Swainson's hawk nesting and rearing activities, surveys for active nests within 0.5 miles of a project site shall be performed by a qualified biologist when a Covered Activity will occur in known Swainson's hawk nesting territory during the typical nesting and rearing season (March 15 to August 15). If one or more active Swainson's hawk nests are present within the 0.5 mile survey area, the active nest(s) shall be monitored by a qualified biologist prior to and during project activities. If, in the professional opinion of the qualified biologist, the nesting pair's behavior suggests agitation or disturbance by project activities, all activities in the area shall immediately stop pending consultation with CDFG. Following a review of the breeding pair's behavior, both as reported by the biologist and independently verified by CDFG, CDFG will determine whether the Covered Activity may continue during the nesting season and, if so, the conditions under which they may continue. The no-disturbance buffer may be lifted prior to August 15, if it is determined safe to do so by a qualified biologist and approved by CDFG. Any reduction in the 0.5 mile buffer radius will be approved in writing by CDFG. If, during the non-breeding season, a Swainson's hawk nest is present in the project area and has been used within the past breeding season, the nest site shall not be disturbed pending consultation with CDFG.

To avoid potential impacts to willow flycatchers during the typical nesting and rearing season (May 15 to August 30), no project related activities shall occur within 300 feet of potential nesting habitat. A Covered Activity may be performed within the 300-foot buffer zone if surveys for active nests are performed prior to the start of the Covered Activity and no active nests are present.

Level of Significance after Mitigation

Seasonal restrictions on equipment operations reduce direct effects on special-status breeding birds. Pre-construction plant and nesting bird surveys, and resulting activity restrictions will avoid impacts to these species. Implementation of Mitigation Measures 3.4-1a through 3.4-1d will reduce the impact to less than significant.

Impact 3.4-2: Construction of new and maintenance and repair of existing stream access and crossings could result in impacts to special-status plant or animal species (Less than Significant).

Crossing construction and use as a Covered Activity may include the placement of a boulder weir on the downstream side of the crossing at or near grade and placement of angular quarry rock within the crossing location. Constructing and using the crossing for livestock or vehicles can adversely affect stream and riparian special-status species. Although disturbances are temporary and intermittent, movement of livestock and vehicles can mobilize sediment, decreasing habitat quality for aquatic species, destabilize streambeds and banks, and inhibit the growth or reduce the vigor of riparian or instream vegetation. ITP Additional SVRCD and Sub-Permittee Avoidance and Minimization Obligation D.1 and 3 (Article XV), however, prohibit livestock and vehicles crossing flowing streams between October 31 through July 1, except in designated, CDFG-approved crossing lanes. Further, the ITP and sub-permits include the following restrictions:

- Crossing sites shall not be located in the tails of pools, known spawning habitat, or identified, suitable spawning habitat;
- Approaches must be no steeper than 3:1, and should be sloped with angular base rock;
- For intermittent streams, application of rock shall occur when the stream channel is dry; and
- Annual monitoring shall be required to detect shifting of base rock.

Implementation of these measures is sufficient to render this impact less than significant.

Mitigation Measures

This potential impact was determined to be less than significant. No mitigation measures required.

Impact 3.4-3: ITP Covered Activity 10, the grazing of livestock within the bed, bank, or channel of a stream different from current operations (i.e., not part of baseline conditions), could impact sensitive habitat and special-status species (Significant).

Grazing of livestock adjacent to the channel or within the bed, bank, or channel, of the Shasta River or its tributaries in accordance with a grazing management plan approved by CDFG is a Covered Activity under the ITP. Grazing of livestock in the riparian or aquatic habitat of the Shasta River or its tributaries can have deleterious effects on both riparian species through habitat destruction. This would be a significant impact.

Mitigation Measures Proposed as Part of the Program

Mitigation Measure 3.4-3a: ITP Additional SVRCD and Sub-Permittee Avoidance and Minimization Obligation E.5 (Article XV) stipulates that livestock grazing be done in accordance with a grazing management plan prepared by the sub-permittee and approved by CDFG. The grazing management plan shall address the timing, duration, and intensity

of livestock grazing within the riparian zone and shall explain how the proposed management plan will result in improved riparian function and enhanced aquatic habitat.

Mitigation Measures Identified in this Draft EIR

Mitigation Measure 3.4-3b: The ITP stipulation noted in Mitigation Measure 3.4-3a does not constitute complete mitigation because the actual restriction is not sufficiently specific. Mitigation Measure 3.4-3b clarifies “intensity” to stipulate the number of livestock allowable per unit area (i.e., stocking rate) per unit of time. Grazing plans completed in accordance with the ITP shall include, in addition to other specified requirements, a means to prohibit livestock from entering live streams.

Level of Significance after Mitigation

Implementation of Mitigation Measures 3.4-3a and 3.4-3b will reduce the impact to less than significant.

Impact 3.4-4: ITP Covered Activities may result in incidental discharge of fill into wetlands under federal jurisdiction causing temporary direct and indirect impacts to wetland function (Less than Significant).

Activities in streams can destabilize streambanks, mobilize silt and small gravels, and impact the root systems of wetland vegetation. This could cause a significant impact to wetlands and wetland function, and could trigger the requirement for federal permitting; however, as described below, the Program and its associated permits would constrain the impact to below the level of significance.

Restoration projects performed by SVRCD which are funded through CDFG’s Fisheries Restoration Grant Program and Klamath River Restoration Grant program would be covered under the Corps’ Regional General Permit 12 (RGP-12; Corps File No.: 27922N). However, RGP-12 includes only restoration actions. Other Covered Activities performed by Agricultural Operators and SVRCD may require a CWA section 404 permit and/or take authorization under ESA. However, it would be the responsibility of Agricultural Operators and SVRCD to obtain any necessary federal permits that might apply to a Covered Activity. Authorization might also be needed from the Regional Water Quality Control Board.¹⁴

Because MLTC Specific Terms and Conditions 20 through 114 are comprehensive and either meet or exceed the provisions which are normally included within CWA section 404 permits, this impact is considered less than significant and requires no further mitigation.

¹⁴ The RWQCB must certify that a Corps section 404 Nationwide permit action meets state water quality objectives by issuing a Water Quality Certification pursuant to CWA section 401.

Mitigation Measures

This potential impact was determined to be less than significant. No mitigation measures required.

Impact 3.4-5: Water efficiency measures required by the Program could in some instances significantly impact nesting special-status birds (Significant).

ITP Covered Activities and associated mitigation measures involve water efficiency measures, including “improve baseline instream flows and/or water quality.” Water management improvement projects may include the lining or piping of diversion ditches which will result in water savings through the elimination of ditch loss. The removal of woody vegetation which may have developed in the diversion ditch would be required prior to the piping or lining of the ditch. Since this vegetation may provide habitat for nesting special-status birds described earlier in this Chapter, nests could be destroyed as a result of such actions.

Strictly speaking, the above-described impact derives from a mitigation measure in the Program (ITP Mitigation obligations of SVRCD (a) Flow Enhancement [Article XIII.E.2]). Flow improvement translates to reduced water usage and possibly more water in the Shasta River to implement the objectives of the Permit Program. However, many diversion ditches support complex and robust assemblages of riparian plant species frequently absent from the mainstem of the river.

On balance, ongoing and future riparian enhancement activities will largely offset the loss of vegetation in the ditches, and potential impacts are limited to the loss of special-status riparian bird nests such as willow-flycatcher nests. Nevertheless, this could cause a significant impact.

Mitigation Measures Proposed as Part of the Program

None specified.

Mitigation Measures Identified in this Draft EIR

Mitigation Measure 3.4-5: Where piping or lining of a diversion ditch is performed as a water efficiency measure under the Program, any required woody vegetation removal shall be considered an activity subject to the same mitigation measure as prescribed for other riparian impacts (Mitigation Measure 3.4-1d).

Level of Significance after Mitigation

Implementation of Mitigation Measure 3.4-5 will reduce the impact on birds nesting in vegetation along diversion ditches to less than significant.

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